Name:

at1118paper: Complete the Square (v405)

Example

By completing the square, find both solutions to the given equation:

$$x^2 - 54x = -720$$

Add $\left(\frac{-54}{2}\right)^2$, which equals 729, to both sides of the equation.

$$x^2 - 54x + 729 = 9$$

Factor the left side.

$$(x - 27)^2 = 9$$

Undo the squaring. We need to consider both $\pm\sqrt{9}$.

$$x - 27 = -3 \quad \text{or} \quad x - 27 = 3$$
$$x = 24 \quad \text{or} \quad x = 30$$

Question 1

By completing the square, find both solutions to the given equation:

$$x^2 - 10x = -21$$

Question 2

By completing the square, find both solutions to the given equation:

$$x^2 - 30x = 799$$

Question 3

By completing the square, find both solutions to the given equation:

$$x^2 - 44x \;=\; 1197$$

Question 4

By completing the square, find both solutions to the given equation:

$$x^2 - 24x \;=\; 112$$

Question 5

By completing the square, find both solutions to the given equation:

$$x^2 + 42x \;=\; 1080$$

Question 6

By completing the square, find both solutions to the given equation:

$$x^2 + 24x \;=\; 697$$